Special Issue

Rolling Contact Fatigue and Wear of Rails and Wheels

Message from the Guest Editor

Railway systems involve contact between rolling wheels and the rail. Under a cyclic wheel passage, these lead to the perpetual initiation of cracks known as “rolling contact fatigue” (RCF) and wear in both surfaces, and these are major damages for wheels and rails. In the initiation and early propagation stages of cracks, crack propagation competes with wear. The mechanism that initiates cracks depends on factors such as the geometry of the rail and wheel, properties of their steels, and the type of traffic and lubrication. At the same time, wear changes the shape of both surfaces, thereby altering the wheel–rail contact region and associated contact stresses. When the wear rate is much greater than the crack growth rate, cracks cannot propagate and, in some cases, are effaced. Conversely, very low wear rates have a negligible influence on crack growth. This Special Issue calls for up-to-date studies on the RCF and wear of rails and wheels, especially the interactions between them. Papers that include on-site measurements are also encouraged.

Guest Editor

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Message from the Editor-in-Chief

Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications.
Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided.
There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

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